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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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Craig A. Hamilton

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EXAMINER

LARYEA, LAWRENCE N

ART UNIT

PAPER NUMBER

3768

MAIL DATE

DELIVERY MODE

10/17/2007

PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

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Office Action Summary	Application No. 10/628,915	Applicant(s) HAMILTON ET AL.	
	Examiner Lawrence N. Laryea	Art Unit 3768	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --
Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 6/8/2007.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☐ Claim(s) 1-27 is/are pending in the application.
 4a) Of the above claim(s) _____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1-27 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 29 July 2003 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
 Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
 Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
 a) ☐ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413)
Paper No(s)/Mail Date. _____ |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| 3) <input checked="" type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08)
Paper No(s)/Mail Date <u>6/8/2007 11/04/05 05/27/05</u> . | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Examiner acknowledges Applicant's amendment and remarks filed May 08, 2007.

Claims 1-26 and 27 are now pending. The Examiner acknowledges the amendments to Claims 5,6 and 16 as well as the addition of Claims 22-27.

Applicant's arguments with respect to the rejection(s) of claim(s) 1-26 and 27 have been fully considered and are persuasive. Therefore, the rejection has been withdrawn. However, upon further consideration, a new ground(s) of rejection is made.

Claim Rejections - 35 USC § 103

1. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

2. Claims 1-26 and 27 are rejected under 35 U.S.C. 103(a) as being unpatentable over **Ugurbil et al (Patent 5908386)** in view **Prince et al (Patent 6892089)** and further view **Ryals et al (Patent 5431161)**.

3. Re Claims 1-26 and 27: **Ugurbil et al** teach a system of displaying cardiac information of a patient comprising: obtaining a plurality of images of the heart of the patient at a plurality of heart rates and displaying both wall motion and the at least one perfusion images (**See Col. 9, lines 1-64 and Figures 3A,4,5,7 and 8**):

4. **Ugurbil et al** teach the claimed invention see rejection supra; however **Ugurbil et al** does not expressly teach that a stress inducing agent is used and the acquired images are cine loop.

5. **Prince et al** teach a cardiac motion tracking using cine harmonic phase MRI wherein differing locations associated with a heart is investigated under dosage of stress inducing agent (**See Col. 19, lines 50-57, Col. 21, lines 59-64, Col. 24, lines 48-65 and Figure 16a and other images**).

It would have been obvious to one having ordinary skill in the art at the time invention was made to modify the system of displaying cardiac information of a patient similar to that of **Ugurbil et al** wherein a screen displays differing locations associated with the heart of the patient for a differing or single dosage of a stress inducing agent similar to that of **Prince et al** in order to provide a mechanism to detect heart diseases (ischemia) and avoid premature test termination during the early stages of the myocardial examinations.

6. **Ugurbil et al** and **Prince et al** teach the claimed invention see rejection supra; however **Ugurbil et al** and **Prince et al** do not teach the cardiac imaging system in includes plurality of frames wherein the display displays simultaneously both wall motion cine loops and the at least one perfusion cine loop.

7. Further Re Claims 1,13-15, 16, and 18-21: **Ryals et al** disclose a system of displaying cardiac information of a patient (**See Col. 5, line 66-68**) comprising: obtaining a plurality of cardiac image cine loops of the heart of the patient at a plurality of heart rates (**See Col. 29, line 23-51**) the plurality of cine loops including cine loops including

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frames of wall motion images and at least one cine loop including frames of perfusion images of at least one cardiac location (**See Figures 8,13 and Col. 50, line 3-8**) and simultaneously displaying both wall motion cine loops and the at least one perfusion cine loop (**See Col. 5, line 6-25,35-39 and Col. 53, line 47-61**).

8. Further Re Claims 18-21: **Ryals et al** disclose a system of displaying cardiac information of a patient wherein a user interface for cardiac image imaging evaluation, comprising: at least one region configured to display a plurality of cine loops of MRI images of cardiac wall motion; and at least one region configured to display at least one image of cardiac perfusion (**See Figures 3,5-8,10-13,14, Col. 5, line 62-65, Col. 12, line 3-14, Col. 21, line 60-68, Col. 22, line 1-10**).

9. Further Re Claim 14: **Ryals et al** disclose a system of displaying cardiac information of a patient wherein a computer program product for displaying cardiac information of a patient, comprising: a computer readable medium having computer readable program code embodied therein, the computer readable program code comprising: computer readable program code configured to obtain a plurality of MRI cine loops of the heart of the patient at a plurality of heart rates, the plurality of cine loops including cine loops including frames of wall motion images and at least one cine loop including frames of perfusion images of at least one cardiac location; and computer readable program code configured to simultaneously display both wall motion cine loops and the at least one perfusion cine loop (**See Col. 5, line 49-65 and Col. 18, line 16-26**).

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10. Further Re Claim 3: **Ryals et al** disclose a system of displaying cardiac information of a patient wherein obtaining a plurality of cardiac image cine loops comprises acquiring a plurality of cardiac image cine loops while a stress test is administered to the patient (**See Col. 9, line 9-44 and Col. 48, line 48-67**).

11. Further Re Claim 4: **Ryals et al** disclose a system of displaying cardiac information of a patient comprising evaluating the displayed cardiac image cine loops to determine a presence or absence of coronary artery disease based on the displayed cine loops (**See Col. 5, line 39-48**).

12. Further Re Claims 2,7-11 and 12: **Ryals et al** disclose a system of displaying cardiac information of a patient wherein a computer operative functions are used to add, repeat, remove frames from at least one of the displayed wall motion cine loops or the perfusion cine loop and adjust the duration of display of frames of a least one of the plurality of cardiac image cine loops such that each of the cardiac image cine loops has a common total duration (**See Col. 52, line 36-49, Col. 8, line 56-68, Col. 31, line 21-68, Col. 32, line 1-56, Col. 33, line 24-68, Col. 34, line 1-46**).

It would have been obvious to one having ordinary skill in the art at the time invention was made to modify the system of displaying cardiac information of a patient similar to that of **Ugurbil et al** and **Prince et al** to incorporate similar teachings of **Ryals et al** wherein cardiac imaging system includes plurality of frames wherein the display displays simultaneously both wall motion cine loops and the at least one perfusion cine loop in order to allow to visualization of image frames and also allow quantitative and qualitative analysis of the image data including segmented functional display illustrating

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perfusion ratios and wall movement for a selected section of myocardium by a physicians in diagnosing cardiac diseases (**See Col.8 lines 56-68**) as taught by **Ryals et al.**

Conclusion

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

Aharon et al (Pub. 2004/0027359), Simonetti et al (Patent 6434412), Wu (Patent 7047060), Gupta et al (Patent 6292683), Wu (Patent 7047060) and Constantinides (Pub. 2003/0120151) disclose related claimed invention.


Any inquiry concerning this communication or earlier communications from the examiner should be directed to Lawrence N. Laryea whose telephone number is 571-272-9060. The examiner can normally be reached on 9:30 a.m.-5:30 p.m. EST.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Eleni Mantis-Mercader can be reached on 571-272-4740. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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